REMARKS

Claims 1-7, 9, 10 and 15-22 are pending. Claims 8 and 11-14 are currently canceled. Claims 16 to 20 have been withdrawn from consideration. Claims 1 and 9 are currently amended. Reconsideration of the application is requested.

Claim 1 has been amended so that $0.1 \leq x \leq 0.375$, the first step recites "dry grinding" and "at least one" boron compound, and the pellet density is from about 3.3 to about 3.5 g/cm^3. Support for these changes can be found, for example, in Table 5 and on page 12, lines 19-24 of the specification as filed (x-range), on page 7, lines 5-12 (dry grinding), on page 4, lines 10-12 (boron compounds), and in Table 3 (pellet densities). Claim 9 has been amended to remove the changed x range and would be redundant if changed since the claim already depends upon amended claim 1.

§ 112 Rejections

Claims 1-7, 9, 10 and 15 stand rejected under 35 U.S.C. 112, first paragraph, as purportedly failing to comply with the written description requirement. The Examiner states that the claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) at the time the application was filed, had possession of the claimed invention. Claim 1 has been amended to recite that $0.1 \leq x \leq 0.375$. Support for this amendment has been cited above. Claims 2-7, 9, 10, and 15 depend upon amended claim 1 and add further limitations thereto. Since amended claim 1 is now patentable, likewise so are claims 2-7, 9, 10, and 15.

The rejection of claims 1-7, 9, 10 and 15 under 35 U.S.C. 112, first paragraph, as purportedly failing to comply with the written description requirement has been overcome and should be withdrawn.

Claims 1-7, 9, 10 and 15 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner has asserted that claim 1 recites the limitation "boron compound(s)" and that there is insufficient antecedent basis for this limitation in the

claim. The Applicants have amended claim 1 to recite "at least one boron compound" with support as described above. With this amendment, claim 1 is now in compliance with 35 U.S.C. 112, second paragraph. Claims 2-7, 9, 10, and 15 depend upon amended claim 1 and add further limitations thereto. Since amended claim 1 is now patentable, likewise so are claims 2-7, 9, 10, and 15.

The rejection of claims 1-7, 9, 10 and 15 under 35 U.S.C. 112, second paragraph, as purportedly failing to comply with the written description requirement has been overcome and should be withdrawn.

§ 103 Rejections

Claims 1-3, 5-7, 9, 10, and 15 are rejected under 35 USC § 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Shiozaki et al, JP 2002-304993. It is the Examiner's position that Shiozaki teaches a positive electrode active material for a secondary battery having the formula $Li_xMn_aNi_bCo_cO_2$ with a, b, and c represented by the Figure shown in the abstract. The Examiner also asserts that Table 1 teaches a specific compound of $LiMn_{0.35}Ni_{0.42}Co_{0.23}O_2$ among other specific compounds. The Examiner states that a transition metal hydroxide may be used as a raw material or a precursor and that a boron compound is added to the mixture before heat treatment to effect sintering. The Examiner further states that the boron compound may be boric acid or boron oxide in stated amounts. A lithium compound such as lithium hydroxide or lithium carbonate is added to the mixture, the mixture is heat treated at a temperature between 950-1100°C and that the mixture is heat treated in an oxygen atmosphere for 5 hours. Thus the claims are anticipated. The Examiner also states that the pellet density of claim 1 and the properties recited by claim 9 and 10 of the produced Li-Ni-Co-Mn-oxide compound are considered inherent in view of the teachings of Shiozaki. Since the method of the claimed invention and the methods of the prior art appear to be the same, one of skill would have known that the similar materials produced by similar methods would have similar properties.

The Applicants respectfully traverse for at least the following reasons. As noted above, the Applicants have amended claims 1 and 9. The Figure in the abstract of Shiozaki, upon careful inspection, excludes the line where the amount of Mn and Ni are the same. This is

supported by the statement in the abstract, "…a, b and c should be positioned in a range shown by a region surrounded by lines". (emphasis added) Furthermore, the region is bounded by points that are open circles which indicate, to one of skill in the art, that the bounding lines are excluded from the bounded region. The specific compound, $LiMn_{0.35}Ni_{0.42}Co_{0.23}O_2$, listed by the Examiner does not have Mn=Ni as required by Applicants' amended claim 1. Even though the abstract excludes the line where Mn=Ni, inspection of Table 1 shows an Example (Example 8) that has the formula $LiMn_{0.3}Ni_{0.3}Co_{0.4}O_2$. The Applicants have amended claim 1 to recite that the materials are made by dry grinding to distinguish from the description of Example 8 in paragraph [0076] of the machine translation of Shiozaki where wet grinding is done. As a result, amended claim 1 is not anticipated by Shiozaki and the anticipation rejection is improper and should be withdrawn. With regards to obviousness, there is no teaching or suggestion in Shiozaki to make the mixed metal (Ni-Mn-Co) lithium oxides by dry grinding the mixed metal hydroxide with a lithium salt and at least one boron compound. All of the Examples of Shiozaki call for "wet grinding". As a result the Examiner has not made a *prima facie* case of obviousness and the alternative obviousness rejection of claim 1 over Shiozaki is improper and should be withdrawn.

Claims 2-3, 5-7, 9, and 15 all depend upon claim 1 and add further limitations thereto. Since amended claim 1 is now patentable, likewise so are claims 2-3, 5-7, 9, and 15.

With respect to claims 1, 9, and 10 the Applicants traverse the assertion by the Examiner that the pellet density of claim 1 and the properties of the produced Li-Ni-Co-Mn-oxide compound are considered inherent in view of the teachings of Shiozaki since the method of the claimed invention and the method of the prior art appear to be the same. As Applicants have shown above, the methods, as amended, are not the same therefore inherency does not apply.

The rejection of claims 1-3, 5-7, 9, 10, and 15 under 35 USC § 102(b)/103(a) as being anticipated by, and alternatively unpatentable over Shiozaki et al, JP 2002-304993, has been overcome and should be withdrawn.

Claims 21 and 22 stand rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over, Kang et al., US 7,205,072 B2. The Examiner has asserted that Kang teaches a cathode material for a lithium ion rechargeable battery that has the formula

$Li_{1+x}Ni_{\alpha}Mn_{\beta}Co_{\gamma}M'_{\delta}O_{2-z}F_z$ wherein x is between about 0 and 0.3, α is between about 0.2 and 0.6, β is between about 0.2 and 0.6, γ is between about 0 and 0.3, δ is between about 0 and 0.15, and z is between about 0 and 0.2. The Examiner further asserts that to prepare the $Li_{1+x}Ni_{\alpha}Mn_{\beta}Co_{\gamma}M'_{\delta}O_{2-z}F_z$ compound, appropriate amounts of lithium hydroxide (or lithium carbonate), lithium fluoride and Ni-Mn-Co-hydroxide are mixed. The mixture is calcined at 450-550°C for 12-30 hours in air and then at 900-1000°C for 10-24 hours in either air or oxygen. The Examiner asserts that claims 21 and 22 recite properties of the produced Li-Ni-Co-Mn-oxide compound, which are considered inherent in view of the teachings of Kang. The Examiner admits that Kang does not explicitly state the amount of sintering agent added to the mixture to prepare the cathode active material.

The Applicants respectfully traverse the rejections for at least the following reasons. In the context of the Kang patent, taken as a whole, the Applicants interpret the phrase, "between about 0 and …" to exclude zero. In particular, Applicants interpret δ and z to be not equal to zero for the following reasons. Col. 2, lines 43-58 describe layered lithium nickel manganese oxide cathode materials such as (1) cathode materials doped with fluorine on oxygen sites…(2) cathode materials doped with various metal ions on transition metal sites…and (3) cathode materials surface-coated to improve cycling/power performance and safety, wherein the coating element of the coating material source is at least one element selected from the group consisting of Al, Bi, Ga, Ge, In, Mg, Pb, Si, Sn, Ti, Tl, Zn, Ar. In case (1) and (3) the materials produced are not the $Li_y[Ni_xCo_{1-2x}Mn_x]O_2$ of Applicants' claim 21. According to the specification, it is possible that in case (2) the dopant is cobalt. However the described methods—the solid-state reaction method (col. 2, line 64 – col. 3, line 24, see especially lines 17-21), the aqueous solution method (col. 2, lines 25-36), and the sol-gel method (col. 2, lines 37-47) all require the addition of lithium fluoride and M′-hydroxides, oxides, acetates. Also please note that the surface-coating method (col. 2, lines 48-61) is used to coat the synthesized compound, $Li_{1+x}Ni_{\alpha}Mn_{\beta}Co_{\gamma}M'_{\delta}O_{2-z}F_z$, which Applicants presume has been synthesized by one of the methods just described. Therefore, the method claims all require fluoride and M′ leading to the conclusion that δ and z cannot be zero. Finally, the claims recite that δ is between a value greater than 0 … and z is between a value greater than 0 … For at least these reasons, the Applicants assert that Kang does not teach or suggest a method to make $Li_y[Ni_xCo_{1-2x}Mn_x]O_2$ as

is required by Applicants' claim 21. Thus the Examiner has not made a *prima facie* case of obviousness. Claim 22 depends upon claim 21 and adds further limitations thereto. Since claim 21 is now patentable, likewise so is claim 22.

Claims 4, 9, and 10 stand rejected under 35 U.S.C. 103(a) as purportedly being unpatentable over Shiozaki et al, JP 2002-304993. Claims 4, 9, and 10 all depend upon amended claim 1 and add further limitations thereto. Since amended claim 1 is patentable over Shiozaki as discussed above, likewise so are claims 4, 9, and 10.

The rejection of claims 4, 9, and 10 under 35 U.S.C. 103(a) as purportedly being unpatentable over Shiozaki et al, JP 2002-304993 has been overcome and should be withdrawn.

Request for Rejoinder

Withdrawn claim 16 incorporates all the claim features of currently amended patentable claim 1. Accordingly, it is submitted that it is likewise patentable. Rejoinder of claim 16 is respectfully requested.

Telephonic Interview

The Applicant wishes to thank Examiner Tracy Dove for the telephonic interview held on August 25, 2008. During the interview the rejections presented in the Office Action of 5/23/2008 were discussed as well as the merits of the case.

In view of the above, it is submitted that the application is in condition for allowance. Examination and reconsideration of the application as amended is requested.

Respectfully submitted,

26-August-2008
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